

Magnet Orientations in Beamlines

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This note is to specify the magnet orientations in the P150 and A150 beamlines. The upstream/downstream orientation is with respect to the primary beam (P150: protons and A150: pbars). The magnet stands, vacuum, water/electrical connections, and location of BPM were considered. Figure 1 shows a plan view of a P150 and A150 tunnel segment with the correct orientation of the B2 and 3Q84 (along with its quad cradle).

B2 dipoles:

Since most of the B2 dipoles in the beamlines are rolled about their longitudinal axis, the leads shall always be toward the aisle. This implies that in the P150 the leads are upstream while in the A150 the leads are on the downstream end.

3Q84 (BOB) quads:

The quads for the beamlines are to be reworked the same as the MI quads. That is, they are to have their flanges/bellows removed on the non-lead end and the 6" tube removed at the lead end leaving the end plate to be used as a BPM registration plate. These quads will have a three-point suspension where the two feet are on the lead end and the single foot is on the other end.

Similar to the MI, an elliptical beam tube with an 8 GeV line style BPM attached will be inserted through the quad. To assure a known position of the BPM it should be registered against the registration plate on the lead-end. Note the BPM is completely outside the quad star chamber unlike the MI.

The 84" quad cradles for the beamlines are designed such that the cradle extension for the corrector is on the same end as the two feet (the lead end). Currently this is on the downstream end. This implies that the lead-end will always be downstream. In the P150 the leads are wall side while in the A150 the leads are aisle side.

C-Magnet:

There are two lead and water connections on the C-magnets. These should always be aisle side for ease of connection.

MI Lambertson:

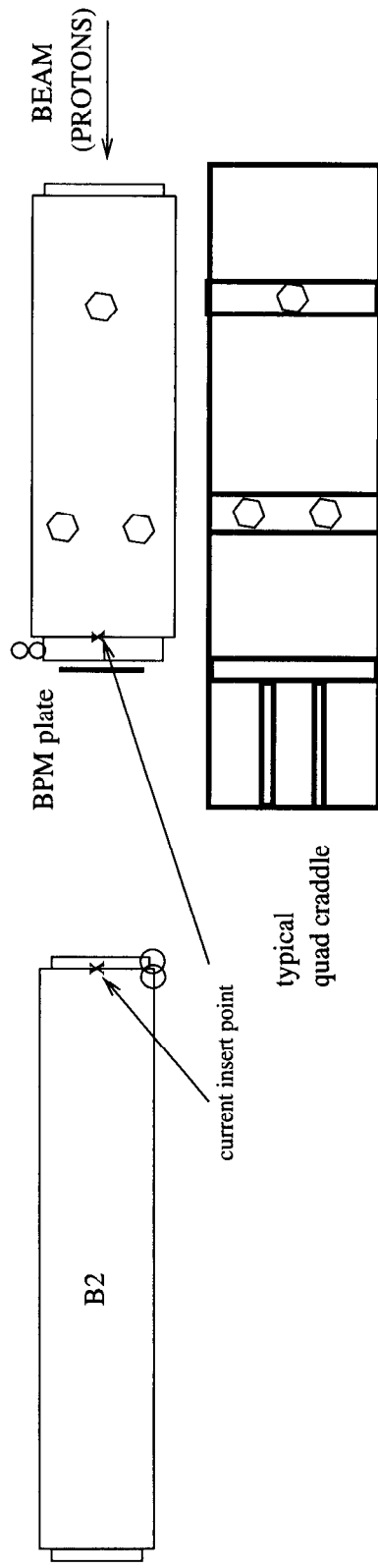
The saddle coil and water connections are on the field side of the Lambertson. The ion pumps are on the field free region side (side which contains circulating beam). The leads are on the top. For the P150 line the leads and water connections are downstream on the wall side (to the outside of the ring). This will also be true for the NuMI installation (at 608) and the abort. The leads of the A150 Lambertsons at Q620 are located upstream (wrt protons in the MI) and on the wall side. The leads on the Lambertsons in Tevatron installation at TEV60 are on the downstream end (in the proton direction) and toward the MI (Tevatron enclosure wall).

3Q60/120:

This magnet has a 15" by 17" cross section. The leads are mounted on the 15" side at one end. Due to vertical space considerations, the leads should be generally mounted on the aisle side such that the 15" dimension is vertical. If another special configuration is required, special instructions will be spelled out. The upstream/downstream orientation is not constrained by stands or vacuum but rather water and electrical connections. Typically, the convention has been to place the leads on the upstream aisle side. There are however two cases in each of the beamlines where a 3Q60 and 3Q120 are on the same circuit (Q712A, Q712B; Q713A, Q713B; Q912A, Q912B and Q913A, Q913B) such the lead ends may want to be next together.

Currently, there is only a single symbol for many of the magnets. The B2's and 3Q84's have their insert point on the lead end. For the beamlines, this inserts the magnets such that the leads are always on the upstream end on the magnet whenever the ADMS drafting beamline scripts are run. Clearly, these could be adjusted by hand but the preferred method will be to specify magnet orientations in the beamline files. An additional note will be released when this issue is resolved.

WALL



MI and P150 line orientation

AISLE

AISLE

A150 line orientation

B2: P150 leads are upstream aisle side
A150 leads are downstream aisle side
3Q84: P150 leads are downstream wall side
A150 leads are downstream aisle side
CMAG: P150 & A150 leads are aisle side
LAM: P150 leads are downstream (wrt MI) & wall side
A150 leads are upstream (wrt MI) & wall side
TEV leads are dnstrm(proton) MI side
3Q60: P150 & A150 leads are aisle side (either up or downstream)



WALL

Figure 1